

College of San Mateo

Course Outline

- New Course
 Update/No change
 Course Revision (Minor)
 Course Revision (Major)

Date: October 29, 2004

Department: Biology Number: 260
Course Title: Introductory Physiology Units: 5.0
Hours/Week: Lecture: 3.0 Scheduled Lab: 6 By Arrangement: 1 hour per week

Length of Course

- Semester-long
 Short course (Number of weeks ___)
 Open entry/Open exit

Grading

- Letter
 Credit/No Credit
 Grade Option (letter or Credit/No Credit)

1. Prerequisite (Attach Enrollment Limitation Validation Form.)

Biology 250 and completion of a college chemistry course with a laboratory.

2. Corequisite (Attach Enrollment Limitation Validation Form.)

none

3. Recommended Preparation (Attach Enrollment Validation Form.)

Recommended Preparation: eligibility for ENGL 838 or 848 and completion of READ 400 or 405 with a grade of C or higher OR concurrent enrollment in READ 400, 405, or 415 OR appropriate skill level as indicated by the reading placement tests or other measures.

4. Catalog Description (Include prerequisites/corequisites/recommended preparation.)

Bio 260 Introductory Physiology (5)

Three lecture hours and six lab hours plus one hour by arrangement per week.

Prerequisites: BIOL 250 and completion of a college chemistry course with a laboratory.

Recommended Preparation: eligibility for

ENGL 848 and completion of READ 400 or 405 with a grade of C or higher OR concurrent enrollment in READ 400, 405, or 415 OR appropriate skill level as indicated by the reading placement tests or other measures. Functions of the organs and systems of the human body. (Intended for students of nursing, physiotherapy, physical education, psychology and related fields. Elective for pre-dental, premedical, and preveterinary students.) A material fee in the amount shown in the Schedule of Classes is payable upon registration. Extra supplies may be required. Students may take either the BIOL 250-260 or the BIOL 265-266 series. (CSU/UC*) (CAN BIOL12 (Completion of BIOL 250 and 260=CAN BIOL SEQ B)

5. Class Schedule Description (Include prerequisites/corequisites/recommended preparation.)

Biology 260 Introductory Physiology

Functions of the organs and systems of the human body. Intended for students of nursing, physiotherapy, P.E., psychology and related fields. Extra supplies may be required. Plus one hour by arrangement per week.

Prerequisite: Biology 250 and completion of a college chemistry course with a laboratory.

Recommended Preparation: eligibility for ENGL 838 or 848 and completion of READ 400 or 405 with a grade of C or higher OR concurrent enrollment in READ 400, 405, or 415 OR appropriate skill level as indicated by

the reading placement tests or other measures. (CSU/UC*) (CAN Biol12) Biol 250 and 260=CAN BiolI Seq B)

6. Course Outcomes (Identify 5-8 expected learner outcomes using active verbs.)

Course outcomes. Students will be able to:

1) Explain: the functional characteristics common to humans and the importance of each to maintaining life, homeostasis and positive and negative feedback mechanisms, the chemistry of water and its importance to living systems, the role of dehydration synthesis and hydrolysis in the formation and breakdown of organic molecules, the role of ATP in cell metabolism, the structural and functional divisions of the nervous system,

2) Distinguish and compare: the general structures and biological functions of various organic molecules, the four types of body tissues, endocrine glands to exocrine glands, pathophysiological conditions that may arise from hypersecretion or hyposecretion of a hormone, meiosis and mitosis, passive transport system to active transport, nonspecific body defenses to specific defenses, excitation-contraction process in skeletal, cardiac and smooth muscle, functions of neuroglial cells and neurons, the somatic and autonomic nervous system, receptor mechanisms for the various senses, events and goals of the absorptive and postabsorptive states. relative fluid volume and solute composition of the fluid compartments of the body, female and male hormonal responses.

3) Describe: the function of various cell organelles, cell growth and reproduction, protein synthesis, the role of the plasma membrane in cells' interactions with their environment, the sliding filament theory of muscle contraction, resting membrane potential, how action potentials are generated and propagated along neurons, reflex activity, the process of hemostasis, the basis of transfusion reactions, the structural characteristics and functions of blood components, control of respiration, transport of respiratory gases, mechanisms to regulate electrolyte and water balance, buffer systems of the body adjustments of the infant to extrauterine life, events that lead to genetic variability of gametes.

4) Recognize and name: stages of mitosis and meiosis, atomic and molecular structures, diagnostic blood tests, parts of an EKG tracing, the important events and products of glycolysis, the Krebs cycle and the electron transport chain,

5) Define and compare: acidosis and alkalosis resulting from respiratory and metabolic factors, parasympathetic and sympathetic responses, basal metabolic rate and total metabolic rate,

6) Apply knowledge to solve problems illustrating: Mendelian genetics, transport of respiratory gases, enzyme activity, osmosis and diffusion, transfusion reactions, analysis of EKG tracings

7) Demonstrate basic laboratory skill for the investigation of physiological phenomena: use of light microscope, diagnostic kits (cholesterol, bilirubin), computerized data acquisition (BIOPAC), tools for metric measurement of length and volume, accurate observation and recording of results, cooperative group preparatio, analysis of simulations and wet labs using the scientific process.

8) Recognize: scientific approach to investigating physiological phenomena.

9) Demonstrate research skills for physiological topics

10) Communicate explanations of physiological phenomena both in writing and orally.

7. **Course Content** (Brief but complete topical outline of the course that includes major subject areas [1-2 pages]. Should reflect all course objectives listed above. In addition, you may attach a sample course syllabus with a timeline.)

(Attached Lecture Topics Outline)

8. **Representative Instructional Methods** (Describe instructor-initiated teaching strategies that will assist students in meeting course objectives. Include examples of out-of-class assignments, required reading and writing assignments, and methods for teaching critical thinking skills.)

Instructional Methodologies (Instructor-initiated learning strategies):

- * Lecture accompanied by computerized demonstrations and presentation materials, transparencies, and other supplementary visual material
- * Discussions
- * Videos
- * Laboratory exercises
- * Case studies
- * One long term research project

9. **Representative Methods of Evaluation** (Describe measurement of student progress toward course objectives. Courses with required writing component and/or problem-solving emphasis must reflect critical thinking component. If skills class, then applied skills.)

Multiple Methods of Evaluation (Measurements of students achievements):

- * 5-6 lecture exams consisting of multiple-choice questions, fill-in questions, matching, and short answer and essay questions.
- * Poster and/or oral presentation concluding the long term project
- * Laboratory reports .
- * Quizzes

10. **Representative Text Materials** (With few exceptions, texts need to be current. Include publication dates.)

Fox, Stuart, Human Physiology, 8th Edition, WCB/McGraw Hill 2005

Fox, Stuart, Laboratory Guide to Human Physiology, Eighth Edition, WCB/McGraw Hill 2005

Marieb, Elaine, Human Anatomy and Physiology, 6th Edition, Benjamin Cummings with Study Partner CD-ROM 2006

Marieb, Elaine, Human Anatomy and Physiology Laboratory Manual, Main Version , 7th Edition, Benjamin Cummings 2006

A.D.A.M. Interactive Physiology CD-ROMs (Available from Benjamin Cummings)

Prepared by:

(Signature)

Email address: tonini@smccd.net

Submission Date: _____

Course Content, Biology 260
Lecture topics and approximate time spent

Week 1) Concept of homeostasis, necessary life functions, levels of structural organization

Weeks 2) Chemistry review, patterns of chemical reactions, chemical composition of living matter,

Week 3) Cellular physiology, cell division, cell cycle control, cell structure and genetic control

Week 4) Membrane transport and membrane potential, intercellular communication signal transduction

Week 5) Principles of Metabolism: endergonic and exergonic reactions, activation energy, energy coupling, enzyme catalysis

Week 6-7) Neuronal physiology, central nervous system, peripheral nervous system, neuronal control of involuntary effectors, functions of the autonomic nervous system

Week 8) Sensory physiology

Week 9) Principles of Endocrinology

Week 10) Muscle Physiology, molecular basis of muscle contraction, skeletal muscle metabolism

Week 11) Cardiac physiology, blood vessels and blood pressure

Week 12) Blood functions and body defenses, immune system

Week 13) Respiratory Physiology

Week 14) Digestive system and regulation of metabolism, energy balance and temperature regulation

Week 15-16) Urinary system, electrolytes, fluid and acid-base balance

Week 17) Reproduction physiology and development